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EXAMINER	
ODOM, CURTIS B	
ART UNIT	**PAPER NUMBER**
2634	

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/531,996	MILLER ET AL.	
	Examiner	Art Unit	
	Curtis B. Odom	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Objections

2. Claim 60 is objected to because of the following informalities: The phrase "the second spreading code" is suggested to be changed to "a second spreading code". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-10, 14-19, 22-28, 31-38, 42-45, 46-48, 51-57, 60-66, and 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo (U. S. Patent No. 6, 480, 523) in view of Murai (previously cited in Office Action 12/24/2003).

Regarding claim 1, Kondo discloses in a single communication channel, a multiple access method comprising steps of:

receiving (Fig. 4, user data) a data sequence to be transmitted, the data sequence comprising plural data symbols;

producing (Fig. 3, block 230, column 7, line 27-column 8, line 17) a spread signal by modulating a first spreading code onto the data sequence; and

transmitting (Fig. 3, block 210, column 8, lines 11-14) the spread signal to a base station;

wherein the previous steps are performed in each transmitter among a plurality of transmitters (Fig. 6, mobile stations 200-1 and 200-2), whereby the base station receives a transmitted spread signal from each of the transmitters (Fig. 6, column 8, lines 25-48),

wherein the same first spreading code is used in each of the transmitters (column 7, lines 27-40),

wherein the transmitting step is performed in each transmitter absent any synchronization with the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters.

Kondo does not disclose the first spreading code spans a period of time which exceeds the time span of a data symbol.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37). Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 4, which inherits the limitations of claim 1, Kondo further discloses providing a second spreading code wherein the steps of claim 1 are performed by a second plurality of transmitters (Fig. 6, blocks 200-3 - 200-I), wherein each of the second transmitters used the same spreading code (column 7, lines 27-40), wherein the second spreading code is equal to the first spreading code.

Regarding claim 5, which inherits the limitations of claim 1, Kondo and Murai do not disclose for some of the transmitters a first spreading gain is used and for others of the transmitters a second spreading gain is used. However, Murai does disclose that the spreading gain depends on the rate of information transmission and the rate of the spreading code (column 1, lines 19-28). Therefore, it would have been obvious to one skilled in the art at the time the invention was made that since each mobile station could transmit data at a different rate that the mobile stations could have different spreading gains. Using a different data rate or spreading gain at each mobile station would not

change the functionality of the invention as taught by Kondo and Murai. Thus, claim 5 does not constitute patentability.

Regarding claim 6, which inherits the limitations of claim 1, Kondo further discloses dividing the single communication channel into plural sub-channels and performing the steps of claim 1 for each sub-channel (column 11, line 66-column 12, line 11), wherein each path is a sub-channel.

Regarding claim 7, Kondo and Murai do not disclose for some of the transmitters the data sequence is received at a first data rate and for others of the transmitters the data sequence is received at a second data rate used. However, it would have been obvious to one skilled in the art at the time the invention was made that the transmission rate of the received data sequence (Fig. 4, user data) would depend on the user transmission data rate. Each mobile station could receive data transmitted at a different data transmission rate as long as the data is formatted for reception by that mobile station. Receiving the user data at a different transmission rate would not change the functionality of the invention as described by Kondo and Murai. Thus, claim 7 does not constitute patentability.

Regarding claim 8, which inherits the limitations of claim 1, Kondo and Murai do not disclose receiving transmissions from a base station that uses paired carrier multiple access signaling. However, Kondo does disclose receiving transmissions from a base station which using multiple access signaling (column 7, lines 19-26). Therefore, it would have been obvious to one skilled in the art at the time the invention was made that the type of multiple access signaling used is deemed a design choice and does not constitute patentability.

Regarding claim 9, Kondo discloses in a single communication channel, a multiple access method comprising steps of:

providing (Fig. 3, block 230, column 7, line 27-column 8, line 17) a first spreading code to each transmitter among a plurality of transmitters (Fig. 6, mobile stations 200-1 and 200-2), each transmitter thus having the same spreading code (column 7, lines 27-40);

in each transmitter, receiving (Fig. 4, user data) a data sequence for transmission;

in each transmitter, generating (Fig. 3, block 230, column 7, line 27-column 8, line 17) a spread signal by modulating the data sequence with the first spreading code and transmitting (Fig. 3, block 210, column 8, lines 11-14) the spread signal over the single communication channel to a base station;

wherein each transmitter transmits its spread signal to the base station asynchronously with respect to the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters.

Kondo does not disclose the first spreading code spans a period of time which exceeds the time span of a data symbol.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37). Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel

interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 10, which inherits the limitations of claim 9, Kondo further discloses the data sequences originate from different users (Fig. 4, user data), wherein since each mobile station is different, the mobile station receive user data from different users corresponding to each mobile station.

Regarding claims 14-18, the claimed method includes features corresponding to the above rejection of claims 4-8, which is applicable hereto.

Regarding claim 19, Kondo discloses in a single communication channel, a multiple access method comprising steps of:

providing plural transmitters (Fig. 6, block 200);

providing (Fig. 6, block 230, column 7, line 27-column 8, line 17) an identical first spreading code in each of the transmitters;

in each transmitter: receiving (Fig. 4, user data) a data sequence, spreading the data sequence using the first spreading code to produce a spread signal, and transmitting (Fig. 3, block 210, column 8, lines 11-14) the spread signal to a base station,

wherein each transmitter transmits its spread signal to the base station asynchronously with respect to the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters.

Kondo does not disclose the first spreading code spans a period of time which exceeds the time span of a data symbol.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37). Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 22, which inherits the limitations of claim 19, Kondo further discloses providing (Fig. 6, blocks 200-3 – 200-l) plural additional transmitters (mobile stations);

providing (Fig. 3, block 230, column 7, line 27-column 8, line 17) an identical second spreading code (column 7, lines 27-40) in each of the additional transmitters;

in each additional transmitter: receiving (Fig. 4, user data) a data sequence, spreading (Fig. 3, block 230, column 7, line 27-column 8, line 17) the data sequence using the second spreading code to produce a spread signal, and (Fig. 3, block 210, column 8, lines 11-14) transmitting the spread signal.

Regarding claim 23, which inherits the limitations of claim 22, Kondo and Murai do not disclose a first spreading code has a first spreading gain and the second spreading code has a second spreading gain

However, Murai does disclose that the spreading gain depends on the rate of information transmission and the rate of the spreading code (column 1, lines 19-28). Therefore, it would have been obvious to one skilled in the art at the time the invention was made that since each mobile station could transmit data at a different rate that the mobile stations could have different spreading gains for each spreading code. Utilizing a different data rate or spreading gain at each mobile station would not change the functionality of the invention as taught by Kondo and Murai. Thus, claim 23 does not constitute patentability.

Regarding claim 24, which inherits the limitations of claim 19, the claimed method includes features corresponding to the above rejection of claim 7 which is applicable hereto.

Regarding claim 25, which inherits the limitations of claim 19, Kondo further discloses dividing the single communication channel into at least two sub-channels (column 11, line 66-column 12, line 11), wherein each path is a sub-channel;

providing (Fig. 6, blocks 200-3 – 200-l) plural additional transmitters (mobile stations);

providing (Fig. 3, block 230, column 7, line 27-column 8, line 17) an identical second spreading code (column 7, lines 27-40) in each of the additional transmitters;

in each additional transmitter: receiving (Fig. 4, user data) a data sequence, spreading (Fig. 3, block 230, column 7, line 27-column 8, line 17) the data sequence

using the second spreading code to produce a spread signal, and (Fig. 3, block 210, column 8, lines 11-14) transmitting the spread signal.

Regarding claim 26, which inherits the limitations of claim 19, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claim 8, which is applicable hereto.

Regarding claim 27, Kondo discloses in a single communication channel, a multiple access method comprising steps of:

receiving (Fig. 4, user data) a data sequence to be transmitted, the data sequence comprising plural data symbols;

producing (Fig. 3, block 230, column 7, line 27-column 8, line 17) a spread signal by modulating a first spreading code onto the data sequence; and

transmitting (Fig. 3, block 210, column 8, lines 11-14) the spread signal to a base station;

wherein the previous steps are performed in each transmitter among a plurality of transmitters (Fig. 6, mobile stations 200-1 and 200-2), whereby the base station receives a transmitted spread signal from each of the transmitters (Fig. 6, column 8, lines 25-48),

wherein the same first spreading code is used in each of the transmitters (column 7, lines 27-40),

wherein the transmitting step is performed in each transmitter absent any synchronization with the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters.

Kondo does not disclose the first spreading code does not repeat during the step of modulating the data sequence.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which do not repeat during the step of modulating the data sequence. The spreading codes span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37), thus, the spreading codes do not have repeat during the step of modulation. Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 28, which inherits the limitations of claim 27, Murai further discloses the data sequence spans a period of time that does not exceed a value T and the first spreading code spans a period of time exceeding T (column 21, lines 11-37).

Regarding claim 31, which inherits the limitations of claim 27, Kondo further discloses providing a second spreading code to be used by each transmitter among a second plurality of transmitters (Fig. 6, blocks 200-3 - 200-I), wherein each of the second transmitters used the same spreading code (column 7, lines 27-40), wherein the second spreading code is equal to the first spreading code.

Regarding claim 32, which inherits the limitations of claim 27, Kondo and Murai do not disclose for some of the transmitters a first spreading gain is used and for others of the transmitters a second spreading gain is used. However, Murai does disclose that the spreading gain depends on the rate of information transmission and the rate of the spreading code (column 1, lines 19-28). Therefore, it would have been obvious to one skilled in the art at the time the invention was made that since each mobile station could transmit data at a different rate that the mobile stations could have different spreading gains. Using a different data rate or spreading gain at each mobile station would not change the functionality of the invention as taught by Kondo and Murai. Thus, claim 5 does not constitute patentability.

Regarding claim 33, which inherits the limitations of claim 27, Kondo further discloses dividing the single communication channel into plural sub-channels and performing the steps of claim 27 for each sub-channel (column 11, line 66-column 12, line 11), wherein each path is a sub-channel.

Regarding claim 34, Kondo and Murai do not disclose for some of the transmitters the data sequence is received at a first data rate and for others of the transmitters the data sequence is received at a second data rate used. However, it would have been obvious to one skilled in the art at the time the invention was made that the transmission rate of the received data sequence (Fig. 4, user data) would depend on the user transmission data rate. Each mobile station could receive data transmitted at a different data transmission rate as long as the data is formatted for reception by that mobile station. Receiving the user data at a different transmission rate would not change

the functionality of the invention as described by Kondo and Murai. Thus, claim 34 does not constitute patentability.

Regarding claim 35, which inherits the limitations of claim 27, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claim 8, which is applicable hereto.

Regarding claim 36, Kondo discloses in a single communication channel, a multiple access method comprising steps of:

providing (Fig. 3, block 230, column 7, line 27-column 8, line 17) a first spreading code to each transmitter among a plurality of transmitters (Fig. 6, mobile stations 200-1 and 200-2), each transmitter thus having the same spreading code (column 7, lines 27-40);

in each transmitter, receiving (Fig. 4, user data) a data sequence for transmission;

in each transmitter, generating (Fig. 3, block 230, column 7, line 27-column 8, line 17) a spread signal by modulating the data sequence with the first spreading code and transmitting (Fig. 3, block 210, column 8, lines 11-14) the spread signal over the single communication channel to a base station;

wherein each transmitter transmits its spread signal to the base station asynchronously with respect to the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters.

Kondo does not disclose the first spreading code does not repeat during the step of modulating the data sequence.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which do not repeat during the step of modulating the data sequence. The spreading codes span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37), thus, the spreading codes do not have repeat during the step of modulation. Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 37, which inherits the limitations of claim 36, Kondo further discloses the data sequences originate from different users (Fig. 4, user data), wherein since each mobile station is different, the mobile station receive user data from different users corresponding to each mobile station.

Regarding claim 38, Kondo further discloses for each data sequence comprising at most N bits, the first spreading code comprises N x g chips, where g is the processing gain (column 1, lines 19-28 and column 21, lines 11-37).

Regarding claims 42-46, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 4-8, which is applicable hereto.

Regarding claim 47, Kondo discloses in a single communication channel, a multiple access method comprising steps of:

providing plural transmitters (Fig. 6, block 200);

providing (Fig. 6, block 230, column 7, line 27-column 8, line 17) an identical first spreading code in each of the transmitters;

in each transmitter: receiving (Fig. 4, user data) a data sequence, spreading the data sequence using the first spreading code to produce a spread signal, and transmitting (Fig. 3, block 210, column 8, lines 11-14) the spread signal to a base station,

wherein each transmitter transmits its spread signal to the base station asynchronously with respect to the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters.

Kondo does not disclose the first spreading code does not repeat during the step of spreading the data sequence.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which do not repeat during the step of spreading the data sequence. The spreading codes span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37), thus, the spreading codes do not have repeat during the step of modulation. Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of

Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 48, which inherits the limitataions of claim 47, Murai further discloses the first spreading code spans a period of time which exceeds the time span of the longest data sequence in any of the transmitters (column 21, lines 11-37).

Regarding claims 51-54, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 22-25 which is applicable hereto.

Regarding claim 55, which inherits the limitations of claim 47, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claim 8, which is applicable hereto.

Regarding claim 56, Fukasawa et al. discloses a system for providing multiple access over a single communication channel comprising a plurality of transmitters (Fig. 6, mobile stations) and a receiver (base station) to which each transmitter transmits, each transmitter comprising:

an input (Fig. 3, antenna) component configured to receive plural data sequences;

a memory store (Fig. 3, block 250, column 7, line 57-column 8, line 14) configured to contain a first spreading code;

a processing component (Fig. 3, block 230, column 7, line 57-column 8, line 14) configured to modulate the data sequence with the first spreading code to produce a spread signal; and

a transmission component (Fig. 3, block 210, column 8, lines 11-14) configured to transmit the spread signal, wherein the spread signal is transmitted in asynchronous

manner relative to the other transmitters (column 7, lines 41-52), wherein mobile station identification is also transmitted with the user data; however, there is no synchronization with the other transmitters,

wherein the first spreading code is used by each transmitter (column 7, lines 27-40).

Kondo does not disclose the first spreading code comprises more than g chips, where g is the processing gain.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which comprise of more than g chips, where g is the processing gain (column 1, lines 19-28 and column 21, lines 11-37). In order for the spreading code to comprise of more than g chips, the spreading code must span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37) as disclosed by Murai. Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 57, which inherits the limitations of claim 56, Murai discloses the data sequences each comprise at most N bits and the first spreading code comprises more the N x g bits (column 1, lines 19-28 and column 21, lines 11-37).

Regarding claim 60, which inherits the limitations of claim 56, Murai discloses the memory store is further configured to contain a second spreading code and the processing component is further configured to modulate the data sequences with either the first or a second spreading code (Fig. 3, block 250, column 7, lines 57-column 8, line 14).

Regarding claim 61, which inherits the limitations of claim 60, Murai further discloses spreading codes can each span a period of time greater than the time span of the longest data sequence (column 21, lines 11-37).

Regarding claim 62, which inherits the limitations of claim 60, Kondo and Murai do not disclose a first spreading code has a first spreading gain and the second spreading code has a second spreading gain

However, Murai does disclose that the spreading gain depends on the rate of information transmission and the rate of the spreading code (column 1, lines 19-28). Therefore, it would have been obvious to one skilled in the art at the time the invention was made that since each mobile station could transmit data at a different rate that the mobile stations could have different spreading gains for each spreading code. Utilizing a different data rate or spreading gain at each mobile station would not change the functionality of the invention as taught by Kondo and Murai. Thus, claim 60 does not constitute patentability.

Regarding claim 63, Kondo and Murai do not disclose for transmitter some data sequences are received at a first data rate and other data sequences are received at a second data rate. However, it would have been obvious to one skilled in the art at the time the invention was made that the transmission rate of the received data sequence (Fig.

4, user data) would depend on the user transmission data rate. Each data sequence could be transmitted at a different data transmission rate as long as the data is formatted for reception by that mobile station. Receiving the user data at a different transmission rate would not change the functionality of the invention as described by Kondo and Murai. Thus, claim 63 does not constitute patentability.

Regarding claim 64, which inherits the limitations of claim 56, the claimed system includes features corresponding to subject matter mentioned in the above rejection of claim 8, which is applicable hereto.

Regarding claim 65, Kondo discloses a system for providing multiple access over a single communication channel, comprising:

a base station (Fig. 6, block 300); and

plural transmitters (Fig. 6, block 200), each configured to transmit data to the base station in an asynchronous manner,

each transmitter configured to:

receive (Fig. 4, user data) a data sequence of at most N bits in length;

contain (Fig. 3, block 250, column 7, line 57-column 8, line 14) a spreading code,

modulate (Fig. 3, block 230, column 7, line 57-column 8, line 14) the data sequence with the spreading code to produce a spread signal; and,

transmit (column 14, lines 50-54, antenna) the spread signal as a data burst,

wherein the same spreading code is used in the transmitters (column 7, lines 27-40).

Kondo does not disclose the first spreading code comprises more than g chips, where g is the processing gain.

Murai discloses a spread spectrum mobile communication system which uses spreading codes which comprise of more than g chips, where g is the processing gain (column 1, lines 19-28 and column 21, lines 11-37). In order for the spreading code to comprise of more than g chips, the spreading code must span a period of time which exceeds the time span of a data symbol (column 21, lines 11-37) as disclosed by Murai. Murai states that mobile communication systems are susceptible to multipath fading which results in degradation of the signal by means of cochannel interference. Murai also states that using spreading codes which span a period of time which exceeds the time span of a data symbol reduce the effects of cochannel interference (column 21, lines 11-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kondo with the teachings of Murai in order to reduce cochannel interference caused by multipath fading in the mobile communication environment.

Regarding claim 66, which inherits the limitations of claim 65, Murai further discloses the spreading code comprises more the N x g chips (column 1, lines 19-28 and column 21, lines 11-37).

Regarding claim 69, which inherits the limitations of claim 65, the claimed system includes features corresponding to subject matter mentioned in the above rejection of claim 7 which is applicable hereto.

Regarding claim 70, which inherits the limitations of claim 69, Kondo discloses the transmitters and base stations (Figs. 1-8) are not configured to perform chip alignment or bit alignment.

Regarding claim 71, which inherits the limitations of claim 65, Kondo discloses the base station is not configured with a multi-user detection component (Figs. 1-8).

Regarding claim 72, which inherits the limitations of claim 65, the claimed system includes features corresponding to subject matter mentioned in the above rejection of claim 8, which is applicable hereto.

5. Claims 2, 3, 11-13, 20, 21, 29, 30, 39-41, 49, 50, 58, 59, 67 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo (U.S. Patent No. 6, 480, 523) in view of Murai (previously cited in Office Action 12/24/03) and in further view of Mahany (previously cited in Office Action 12/24/03).

Regarding claim 2, Kondo and Murai disclose all the limitations of claim 2, (see rejection of claim 1) except the step of transmitting includes providing a preamble data sequence and modulating the preamble data sequence with a first preamble spreading code to produce a spread preamble signal.

However, Mahany discloses transmitting including providing a preamble data sequence and modulating the preamble data sequence with a first preamble spreading code to produce a spread preamble signal (column 9, lines 34-60). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the method of Kondo and Murai with the preamble teachings of Mahany since the preamble would allow for adaptive equalization and maximum ratio combining at the receiver because these techniques generally benefit from training during the preamble period (Mahany, column 3, line 59-column 4, line 3).

Regarding claim 3, which inherit the limitations of claim 2, Kondo and Murai do not disclose the step of transmitting includes providing a second preamble data sequence

and modulating the second preamble data sequence with a second preamble spreading code to produce a spread preamble signal.

However, Mahany discloses transmitting including providing a second preamble data sequence (second preamble portion) and modulating the preamble data sequence with a second preamble spreading code to produce a spread preamble signal (column 9, lines 34-60). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the method of Kondo and Murai with the preamble teachings of Mahany since the preamble would allow for adaptive equalization and maximum ratio combining at the receiver because these techniques generally benefit from training during the preamble period (Mahany, column 3, line 59-column 4, line 3).

Regarding claims 11 and 12, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 2 and 3 which is applicable hereto.

Regarding claim 13, Kondo, Murai, and Mahany do not disclose repeating the first preamble spreading code one or more times. However, it would have been obvious to one skilled in the art that the first preamble spreading code would be repeated if the spreading code were shorter than a data symbol of the data sequence. The spreading code could also be repeated for future transmissions. Thus claim 13 does not constitute patentability.

Regarding claims 20 and 21, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 2 and 3 which is applicable hereto.

Regarding claims 29 and 30, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 2 and 3 which is applicable hereto

Regarding claims 39 and 40, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 2 and 3 which is applicable hereto

Regarding claims 41, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claim 13 which is applicable hereto.

Regarding claims 49 and 50, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 2 and 3 which is applicable hereto.

Regarding claim 58, which inherits the limitations of claim 56, Kondo and Murai disclose all the limitation of claim 58 (see previous rejection of claim 56) except for the memory containing a preamble and a preamble spreading code and the processing component is further configured to modulate the data preamble with the preamble spreading code.

However, Mahany discloses transmitting including providing a preamble data sequence and modulating the preamble data sequence with a first preamble spreading code to produce a spread preamble signal (column 9, lines 34-60). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of Kondo and Murai. with the preamble teachings of Mahany and contain a preamble and preamble spreading code in memory since the preamble would allow for adaptive equalization and maximum ratio combining at the receiver because these

techniques generally benefit from training during the preamble period (Mahany, column 3, line 59-column 4, line 3).

Regarding claim 59, which inherits the limitation of claim 58, Kondo, Murai, and Mahany do not disclose modulating the data preamble sequence with the preamble spreading code by repeating the preamble spreading code one or more times. However, it would have been obvious to one skilled in the art that the preamble spreading code would be repeated if the spreading code were shorter than a data symbol of the data sequence. The spreading code could also be repeated for future transmissions. Thus claim 13 does not constitute patentability.

Regarding claims 67 and 68, the claimed device includes features corresponding to subject matter mentioned in the above rejection of claims 58 and 59 which is applicable hereto

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
December 17, 2004

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